



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 09/712,596
Filing Date: November 14, 2000
Applicant: Sean Harnett
Group Art: 2857
Examiner: Hal D. Wachsman
Title: FUZZY LOGIC OF RF MATCHING NETWORK
Attorney Docket: 3197-000031/REA

Director of the United States Patent and Trademark Office
P.O. Box Appeals Brief - Patents
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

This is an appeal brief in support of an appeal from the March 31, 2003 final rejection of Claims 1 through 9, 11 through 16, 18 through 24, 26 through 31 and 33 through 37.

04/01/2004 EAREGAY1 00000010 09712596

01 FC:1402

330.00 0P

~~02 FC:1254~~

~~1400.00 0P~~

REAL PARTY IN INTEREST

ENI Technology, Inc., being the assignee of the present application, is the real party in interest.

RELATED APPEALS & INTERFERENCES

To the best of Appellant's knowledge, no other appeals or interferences are pending which will directly affect or be directly affected by or have a bearing on the Board's decision in the present pending appeal.

STATUS OF THE CLAIMS

On September 30, 2003, Appellant appealed from the final rejection of Claims 1 through 9, 11 through 16, 18 through 24, 26 through 31 and 33 through 37.

A copy of the claims at issue is provided in attached Appendix A.

STATUS OF AMENDMENTS

No amendment to the claims has been filed or is pending subsequent to the entry of the final rejection.

SUMMARY OF THE INVENTION

The invention relates to a fuzzy logic control arrangement that provides for an impedance match network of the type that is typically employed between a source of RF power at a given impedance, e.g., 50 ohms, and a non-linear load whose impedance can vary in magnitude and phase, e.g., an RF plasma. The fuzzy logic controller fuzzifies the phase and the magnitude of error signals. The error signals are applied to a fuzzy logic interface function based on a number of fuzzy sets. The values of the error signals enjoy some degree of membership in one or more fuzzy sets. Fuzzy logic rules

are applied to the phase and magnitude error signals. In a defuzzification stage, drive signals values are obtained for moving the tuning elements of the variable impedances. The drive signal values are weighted according to respective fuzzy inference functions for which the error signals enjoy membership. Then the weighted drive signal values are combined to produce output drive signals.

ISSUES

Appellants present the following issue for review:

Whether or not Claims 1 through 9, 11 through 16, 18 through 24, 26 through 31 and 33 through 37 are unpatentable under 35 U.S.C. §251 due to a defective reissue declaration.

GROUPING OF THE CLAIMS

Claims 1 through 9, 11 through 16, 18 through 24, 26 through 31 and 33 through 37 stand or fall together.

THE EXAMINER'S RATIONALE

The Examiner noted in the Office Action mailed March 31, 2003 that "Claims 1 through 9, 11 through 16, 18 through 24, 26 through 31 and 33 through 37 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251."

The Examiner noted that "[r]eceipt of an appropriate supplemental oath/declaration under 37 C.F.R. 1.175(b)(1) will overcome this rejection under 35 U.S.C. 251. An example of acceptable language to be used in the supplemental oath/declaration is as follows: Every error in the patent which was corrected in the present reissue application, and is not covered by a prior oath/declaration submitted in this application, arose without any deceptive intention on the part of the applicant."

ARGUMENTS

Appellant notes that a Reissue Application Declaration (copy attached at Appendix B) was filed with the present application on November 14, 2002, that a Reissue Application Supplemental Declaration (copy attached at Appendix C) was filed with the Office on June 3, 2003 and that a Supplemental Declaration For Reissue Application to Correct "Errors" Statement (copy attached at Appendix D) was filed on January 5, 2004.

Applicant submits that the Reissue Application Declaration (Appendix B) complied with the requirements of 37 C.F.R. 1.175 at the time the present application was filed.

Applicant further submits that the Reissue Application Supplemental Declaration (Appendix C) included the following statement:

I verily believe ... that every error listed above, which was corrected in the present reissue application, and is not covered by a prior oath/declaration submitted in this application, arose without any deceptive intention on the part of the applicant.

Applicant notes that while this language does not exactly track that which was suggested by the Examiner, it nonetheless satisfies the provisions of 37 C.F.R. 1.175(b)(1), which provides in part:

For any error corrected, which is not covered by the oath or declaration submitted under paragraph (a) of this section, applicant must submit a supplemental oath or declaration stating that every such error arose without any deceptive intention of the part of the applicant.

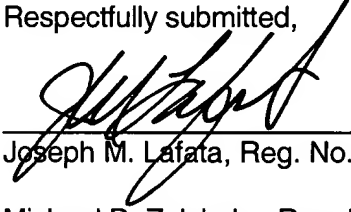
Accordingly, Applicant submits that the above statement from the Reissue Application Supplemental Declaration (Appendix C) complies with 37 C.F.R. 1.175(b)(1) as it references not only the errors that were corrected after the filing of the original Reissue Application Declaration (Appendix B), which is mandated by 37 C.F.R. 1.175(b)(1), but refers to all errors that were corrected in the reissue application. As such, Applicant submits that the Reissue Application Supplemental Declaration renders the rejection under 35 U.S.C. §251 moot.

Alternatively, Applicant notes that the Supplemental Declaration For Reissue Application to Correct "Errors" Statement (Appendix D) includes the language that was suggested by the Examiner in the Office Action mailed March 31, 2003. Accordingly, Applicant submits that the Supplemental Declaration For Reissue Application to Correct "Errors" Statement, alone or in combination with the Reissue Application Supplemental Declaration (Appendix C) renders the rejection under 35 U.S.C. §251 moot.

CONCLUSION

Appellant respectfully submits that the Reissue Application Supplemental Declaration (Appendix C) and/or the Supplemental Declaration For Reissue Application to Correct "Errors" Statement (Appendix D) render the rejection under 35 U.S.C. §251 moot. Accordingly, reversal of the final rejection of Claims 1 through 9, 11 through 16, 18 through 24, 26 through 31 and 33 through 37 is respectfully requested.

Respectfully submitted,



Joseph M. Lafata, Reg. No. 37166

Michael D. Zalobsky, Reg. No. 45,512
HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield, Michigan 48303
(248) 641-1600

Date: March 30, 2004

Appendix A: Claims Pending In Subject Application

1. (TWICE AMENDED) Fuzzy logic method of tuning [an RF] a radio frequency (RF) matching network of the type having an input at which is applied RF power at a given frequency and at a given impedance, and an output which applies said power to an RF load having a non-constant impedance, said matching network including a phase-magnitude error detector means providing a phase error signal and a magnitude error signal related respectively to impedance phase angle error and impedance magnitude error, and said matching network comprising at least a first variable impedance device having a driven element for varying the impedance thereof and a second variable impedance device having a driven element for varying the impedance thereof; the method comprising:

supplying said phase and said magnitude error signals to a fuzzy logic controller, wherein each of said error [signal] signals has a magnitude and direction[.];

applying each of said phase and magnitude error [signal] signals to a fuzzy logic inference function based on a number of overlapping fuzzy sets, and where [the] a value of each of said phase and magnitude error [signal] signals enjoys membership in one or more fuzzy sets;

applying fuzzy logic rules to said phase and magnitude error signals according to [the] said one or more fuzzy sets for which said [first and second] phase and magnitude error signals enjoy membership;

obtaining drive signal values based on said fuzzy logic rules for each of said phase and magnitude error signals;

weighting said drive signal values according to the respective one or more fuzzy sets inference [functions] for which said phase and magnitude error signals enjoy membership; and

combining said weighted drive signal values to produce an output drive signal for the driven element of said first variable impedance device [driven element].

Appendix A: Claims Pending In Subject Application

2. (TWICE AMENDED) Fuzzy logic method of tuning an RF matching network according to claim 1, further comprising:

obtaining additional drive signal values based on additional fuzzy logic rules for each of said [first and second] phase and magnitude error signals;

weighting said additional drive signal values according to additional respective fuzzy inference functions; and

combining [such] said weighted additional drive signal values to produce an output drive signal for the driven element of said second variable impedance device [driven element].

3. (TWICE AMENDED) Fuzzy logic method of tuning an RF matching network according to claim 2, wherein said fuzzy logic rules and said additional fuzzy logic rules comprise a matrix of NxM drive signal values, where N is the number of fuzzy sets of said phase error signal and M is the number of fuzzy sets of said magnitude error signal, and each of said drive signal [value] values and said additional drive signal values corresponds to a given set of said phase signal and a given set of said magnitude error signal.

4. (AMENDED) Fuzzy logic method of tuning an RF matching network according to claim 1 wherein said number of overlapping fuzzy sets [being] are centered respectively about zero, a medium positive value, a medium negative value, a high positive value, and a high negative value.

Appendix A: Claims Pending In Subject Application

5. (TWICE AMENDED) A fuzzy logic controller for tuning [an RF] a radio frequency (RF) matching network, wherein said matching network is positioned between a source of applied RF power at a given frequency and at a given impedance, and an RF load having a non-constant impedance, said matching network including a phase-magnitude error detector means providing a phase error signal and a magnitude error signal related respectively to impedance phase angle error and impedance magnitude error, and said matching network comprising at least a first variable impedance device having a driven element for varying the impedance thereof and a second variable impedance device having a driven element for varying the impedance thereof; the fuzzy logic controller comprising:

an input means receiving values of said phase and magnitude error signals;

means for applying the values of said phase and magnitude error signals to a fuzzy logic inference function based on a number of overlapping fuzzy sets, and where a [the values] value of each of said phase and magnitude error signals enjoy membership in one or more fuzzy sets;

means for applying fuzzy logic rules to said phase and magnitude error signals according to fuzzy sets for which said error signals enjoy membership;

means for obtaining drive signal values according to said fuzzy logic rules for each [set] of said fuzzy sets for which said error signals enjoy membership;

means for weighting said drive signal values according to the respective fuzzy inference functions for the values of said phase and magnitude error signals; and

means for combining said weighted drive signal values to produce an output drive signal for said first variable impedance device driven element.

Appendix A: Claims Pending In Subject Application

6. (TWICE AMENDED) Fuzzy logic controller according to claim 5, further comprising:

means for obtaining additional drive signal values based on additional fuzzy logic rules for each of said phase and magnitude error signals;

means for weighting said additional drive signal values according to additional respective fuzzy inference functions; and

means for combining [such] said weighted additional drive signal values to produce an output drive signal for said second variable impedance device driven element.

Appendix A: Claims Pending In Subject Application

7. (TWICE AMENDED) Fuzzy logic method of tuning a tunable [RF] radio frequency (RF) device of the type having an input at which is applied RF power at a given frequency and at a given impedance, and an output, including an error detector means providing a first error signal and a second error signal, and said tunable RF [means] device including at least a first variable impedance device having a driven element for varying the impedance thereof and a second variable impedance device having a driven element for varying the impedance thereof; the method comprising:

supplying said first and said second error signals to a fuzzy logic controller, wherein each of said first and said second error [signal] signals has a magnitude and direction[.];

applying each of said first and said second error [signal] signals to a fuzzy logic inference function based on a number of overlapping fuzzy sets, and generating a membership value that corresponds to [the] an amount of overlapping membership of the error [signal value] signals in one or more fuzzy sets;

applying a plurality of fuzzy logic rules to said first and second error signals according to the fuzzy sets for which said first and second error signals enjoy membership;

obtaining a plurality of drive signal values based on said plurality of fuzzy logic rules for each of said first and second error signals;

weighting said drive signal values according to the respective membership values for said first and second error signals; and

combining said weighted drive signal values to produce an output drive signal for said first variable impedance having said first variable impedance device driven element.

Appendix A: Claims Pending In Subject Application

8. (AMENDED) Fuzzy logic method of tuning a tunable RF device according to claim 7, further comprising:

obtaining a plurality of additional drive signal values based on additional fuzzy logic rules for each of said first and second error signals;

weighting said additional drive signal values according to a plurality of additional respective fuzzy inference functions; and

combining such weighted additional drive signal values to produce an output drive signal for said second variable impedance device driven element.

Appendix A: Claims Pending In Subject Application

9. (TWICE AMENDED) An electrical network comprising:

a radio frequency (RF) generator for generating an RF signal, the RF generator having a source impedance;

a load receiving the RF signal, the RF signal providing a driving energy to the load, the load having a variable load impedance;

a matching network interposed between the RF generator and the load, the matching network having a variable network impedance, the matching network detecting at least one of an impedance phase and an impedance magnitude error and generating at least one of a respective phase error signal and a magnitude error signal, the matching network varying at least one of the impedance phase and the impedance magnitude error in order to vary the network impedance;

a fuzzy inference module receiving the at least one of the respective phase and magnitude error signals and defining a membership value that varies in accordance with membership in at least one fuzzy set; and

a controller receiving the at least one respective phase error signal and magnitude error signal, the controller applying fuzzy logic rules to the at least one of the respective impedance phase error signal and the impedance magnitude error signal according to the fuzzy sets for which said error signals enjoy membership in order to generate at least one control signal to vary the network impedance, thereby matching the source impedance and the load impedance.

Appendix A: Claims Pending In Subject Application

11. (AMENDED) The network of claim 9 wherein the controller further comprises a rules module having a set of rules applied in accordance with the membership value, the rules module generating at least one fuzzy output.

12. (TWICE AMENDED) The network of claim 11 wherein the controller further comprises a defuzzification module, the defuzzification module converting the at least one fuzzy output to the at least one control signal.

13. (ORIGINAL) The network of Claim 9 wherein the matching network further comprises at least one of a variable capacitance and a variable inductance.

14. (ORIGINAL) The network of claim 9, wherein the matching network further comprises a circuit for varying the network impedance.

15. (ORIGINAL) The network of claim 9 wherein the load is a RF plasma chamber.

16. (TWICE AMENDED) An electrical network comprising:

a radio frequency (RF) generator for generating an RF signal, the RF generator having a source impedance;

a load receiving the RF signal, the RF signal providing a driving energy to the load, the load having a variable load impedance;

a matching network interposed between the RF generator and the load, the matching network having a variable network impedance, the matching network detecting at least one network parameter and generating at least one sensed signal, the matching network varying the network impedance in order to match the variable load impedance and the source impedance, wherein the at least one sensed signal comprises at least one of an impedance phase error signal and an impedance magnitude error signal;

a fuzzy inference module receiving the at least one sensed signal and defining a membership value that varies in accordance with membership in at least one fuzzy set; and

a controller receiving the at least one sensed signal, the controller applying fuzzy logic rules to the at least one sensed signal according to the fuzzy sets for which said phase and magnitude error signals enjoy membership in order to generate at least one control signal to vary the network impedance, thereby matching the source impedance and the load impedance.

Appendix A: Claims Pending In Subject Application

18. (AMENDED) The network of Claim 16 wherein the controller further comprises a rules module having a set of rules applied in accordance with the membership value, the rules module generating at least one fuzzy output.

19. (TWICE AMENDED) The network of claim 16 wherein the controller further comprises a defuzzification module, the defuzzification module converting at least one fuzzy output to the at least one control signal.

20. (ORIGINAL) The network of claim 16 wherein the matching network includes at least one of a variable capacitance and a variable inductance.

21. (ORIGINAL) The network of claim 16 wherein the matching network further comprises a circuit for varying the network inductance.

22. (ORIGINAL) The network of claim 16 wherein the matching network further comprise a circuit for varying the network impedance.

23. (AMENDED) The network of claim 16, wherein the load is a RF plasma chamber.

Appendix A: Claims Pending In Subject Application

24. (TWICE AMENDED) A method of tuning a radio frequency (RF) impedance matching network having an input which receives RF power and an output which applies the power to a RF load, the matching network having a variable impedance, comprising the steps of:

determining an impedance phase error and an impedance magnitude error and generating a corresponding phase error signal and a corresponding magnitude error signal;

applying the impedance phase and impedance magnitude errors to a fuzzy logic inference function, the phase and magnitude error signals each having at least one respective membership value in at least one fuzzy set; and

applying fuzzy logic rules to the impedance phase and impedance magnitude error signals according to the fuzzy sets for which said error signals enjoy membership to generate fuzzy output signals based upon the phase and the magnitude error signals and generating a control signal to adjust the variable impedance of the matching network.

26. (AMENDED) The method of claim 24 wherein the step of applying fuzzy logic further comprises applying logic rules to the at least one respective membership value to generate at least one respective fuzzy output value.

27. (TWICE AMENDED) The method of claim 24 wherein the step of applying logic rules further comprises the step of weighting at least one respective fuzzy output value according to the at least one respective membership value.

Appendix A: Claims Pending In Subject Application

28. (AMENDED) The method of claim 27 wherein the step of applying logic rules further comprises the step of combining said weighted at least one respective fuzzy output values to produce the control signal.

29. (AMENDED) The method of claim 24, wherein the logic rules comprise a matrix of NxM fuzzy output values, where N is the number of fuzzy sets of a first sensed signal and M is the number of fuzzy sets of a second sensed signal, and each fuzzy output value corresponds to a predetermined set of the first sensed signal and a predetermined set of the second sensed signal.

30. (AMENDED) The method of claim 24 wherein the at least one fuzzy set comprises a plurality of fuzzy sets centered respectively about zero, a medium positive value, a medium negative value, a high positive value, and a high negative value.

Appendix A: Claims Pending In Subject Application

31. (TWICE AMENDED) A method of tuning a radio frequency (RF) impedance matching network having an input which receives RF power and an output which applies the power to a RF load, the matching network having a variable impedance, comprising the steps of:

determining a network parameter and generating a corresponding sensed signal that varies in accordance with the network parameter;

applying the corresponding sensed signal to a fuzzy logic inference function, the corresponding sensed signal having at least one respective membership value in at least one fuzzy set; and

applying fuzzy logic rules to the corresponding sensed signal according to fuzzy sets for which said sensed signal enjoys membership;

generating fuzzy output signals based upon the corresponding sensed signal; and

generating a control signal to adjust the variable impedance of the matching network based upon the fuzzy output signals.

33. (TWICE AMENDED) The method of claim 31 wherein the step of applying fuzzy logic rules further comprises applying logic rules to the at least one respective membership value to generate at least one respective fuzzy output value.

34. (TWICE AMENDED) The method of claim 31 wherein the step of applying fuzzy logic rules further comprises the step of weighting at least one respective fuzzy output value according to the at least one respective membership value.

Appendix A: Claims Pending In Subject Application

35. (TWICE AMENDED) The method of claim 34 wherein the step of applying fuzzy logic rules further comprises the step of combining said weighted at least one respective fuzzy output value to produce the control signal.

36. (AMENDED) The method of claim 31, wherein the fuzzy logic rules comprise a matrix of NxM fuzzy output values, where N is the number of fuzzy sets of the corresponding sensed signal and M is the number of fuzzy sets of a second sensed signal, and each fuzzy output value corresponds to a predetermined set of the sensed signal and a predetermined set of the second sensed signal.

37. (AMENDED) The method of claim 31 wherein the at least one fuzzy set comprises a plurality of fuzzy sets centered respectively about zero, a medium positive value, a medium negative value, a high positive value, and a high negative value.

**REISSUE APPLICATION DECLARATION AND POWER OF ATTORNEY
(BY INVENTOR(S) OR ASSIGNEE)**

DECLARATION BY THE INVENTOR(S)

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter that is described and claimed in letters patent number 5,842,154, granted on November 24, 1998, and for which invention I solicit a reissue patent on the invention entitled FUZZY LOGIC TUNING OF RF MATCHING NETWORK the specification of which

☒ is attached hereto.

☐ was filed on _____, as reissue application number / and was amended on _____ (if applicable).

☐ I hereby declare that there is no assignee for this application.

**ACKNOWLEDGEMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR
(37 C.F.R. § 1.175)**

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information that is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

PRIORITY CLAIM

I hereby claim foreign priority benefits under Title 35, United States Code, section 119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)

			<u>Priority Claim</u>	
(Number)	(Country)	(Day/Month/Year filed)	Yes	No
_____	_____	_____	_____	_____
(Number)	(Country)	(Day/Month/Year filed)	Yes	No
_____	_____	_____	_____	_____
(Number)	(Country)	(Day/Month/Year filed)	Yes	No
_____	_____	_____	_____	_____

I hereby claim the benefit under Title 35, United States Code, 119(e) of any United States Provisional application(s) listed below:

PRIOR PROVISIONAL APPLICATIONS

(application serial number)

(Month / Day / Year filed)

(application serial number)

(Month / Day / Year filed)

**STATEMENT OF INOPERATIVENESS
OR INVALIDITY OF ORIGINAL PATENT**
(37 C.F.R. § 1.175)

That I believe the original patent to be

☒ partly

☐ wholly

inoperative or invalid by reason of (37 C.F.R. § 1.175(a)(1)):

☐ a defective specification

☐ a defective drawing

☒ the patentee claiming more or less than the patentee had a right to claim in the patent. More particularly, I claimed less literally than I had a right to claim in the patent; namely, by limiting all of the claims of the patent to the recitation of elements unnecessary to define the invention in a literal reading of its broadest aspects (although no believed to be so limiting under the doctrine of equivalents and other legal principals) and primarily by reason of the specific wording of all of the claims so as to specifically recite that the error signals are phase and magnitude error signals.

That the error(s) listed above and all other errors, which are being corrected, up to the time of the filing of this reissue declaration, arose without any deceptive intention on the part of the applicant. (37 C.F.R. § 1.175(a)(2)).

☐ Corroborating affidavits or declarations of others accompany this declaration.

DECLARATION AND POWER OF ATTORNEY

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint Michael P. Brennan, Reg. No. 30,612 and Joseph M. Lafata, Reg. No. 37,166, and each principal, attorney of counsel, associate and employee of Harness, Dickey & Pierce, P.L.C., who is a registered Patent Attorney, my attorney with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith. I request the Patent and Trademark Office to direct all correspondence and telephone calls relative to this application to Harness, Dickey & Pierce, P.L.C., P.O. Box 828, Bloomfield Hills, Michigan 48303 (248) 641-1600.

Full name of sole or first inventor Sean Harnett

Inventor's Signature: Sean Harnett

Date: 11/10/00

Residence: 50 Brooktree Drive, Penfield, New York 14526

Citizenship: United States of America

Post Office Address: 50 Brooktree Drive, Penfield, New York 14526

Please type a plus sign (+) inside this box 

HD. 2B/21 based on PTO/SB/21 (03-00)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/712,596
Filing Date	November 14, 2000
First Named Inventor	Sean Harnett
Group Art Unit	2857
Examiner Name	Hal D. Wachsmen
Attorney Docket Number	3197-000031/REA

Total Number of Pages in This Submission

ENCLOSURES (check all that apply)

- ☐ Fee Transmittal Form
 - ☐ Fee Attached
- ☐ Amendment / Response
 - ☐ After Final
 - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/Incomplete Application
 - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53

- ☐ Assignment Papers (for an Application)
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____

- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
- ☐ Proprietary Information
- ☐ Status Letter

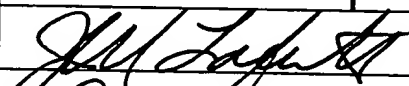
☒ Other Enclosure(s)
(please identify below):

Submission of Reissue Application Supplemental Declaration by Inventors, Reissue Application Supplemental Declaration by Inventors, and return postcard.

Remarks

The Commissioner is hereby authorized to charge any additional fees that may be required under 37 CFR 1.16 or 1.17 to Deposit Account No. 08-0750. A duplicate copy of this sheet is enclosed.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Harnett, Dickey & Pierce, P.L.C.	Attorney Name	Joseph M. Lafata	Reg. No.	37,166
Signature					
Date	June 3, 2003				

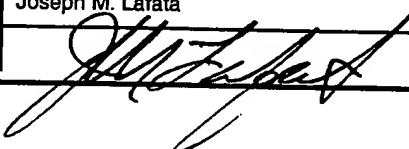
CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Director of the U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on the date indicated below.

Typed or printed name

Joseph M. Lafata

Signature



Date

June 3, 2003



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTORNEY DOCKET NO. 3197-000031/REA

Application No.: 09/712,596

Filing Date: November 14, 2000

Applicant: Sean Harnett

Group Art Unit: 2857

Examiner: Hal D. Wachsman

Title: FUZZY LOGIC TUNING OF RF MATCHING NETWORK

Attorney Docket: 3197-000031/REA

**SUBMISSION OF REISSUE
APPLICATION SUPPLEMENTAL
DECLARATION BY INVENTORS**

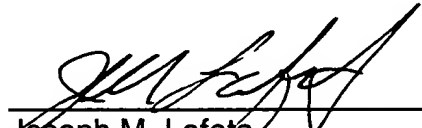
Director of the United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed herewith is a Reissue Application Supplemental Declaration by Inventors to be filed.

Respectfully submitted,

Dated: June 3, 2003



Joseph M. Lafata
Reg. No. 37,166
Attorney for Applicant

Harness, Dickey & Pierce, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
Phone: (248) 641-1600
Fax: (248) 641-0270



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 09/712,596

Filing Date: November 14, 2000

Applicant: Sean Harnett

Group Art Unit: 2857

Examiner: Hal D. Wachsman

Title: FUZZY LOGIC TUNING OF RF MATCHING NETWORK

Attorney Docket: 3197-000031/REA

**REISSUE APPLICATION
SUPPLEMENTAL DECLARATION
BY INVENTORS**

DECLARATION BY THE INVENTORS

As below named inventor, I hereby declare that:

My residence, post office address and citizenship are stated below next to my name. I believe I am an original, first and joint inventor of the subject matter that is described and claimed in letters patent number U.S. 5,531,179, granted on July 2, 1996, and in the subject matter in the amendments filed on September 30, 1998, October 6, 1998, and September 23, 1999 and for which invention I solicit a reissue patent.

**ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF
CANDOR
(37 C.F.R. § 1.175)**

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims. I acknowledge the duty to disclose information that is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent.

**STATEMENT OF INOPERATIVENESS
OR INVALIDITY OF ORIGINAL PATENT
(37 C.F.R. 1.175)**



I verily believe:

- the original patent to be partly inoperative or invalid by reason of the patentee claiming less than the patentee had a right to claim in the patent (37 C.F.R. 1.175(a)(1)); and
- that every error listed above, which was corrected in the present reissue application, and is not covered by a prior oath/declaration submitted in this application, arose without any deceptive intention on the part of the applicant. (37 CFR 1.175(a)(2).

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURES BY THE INVENTORS

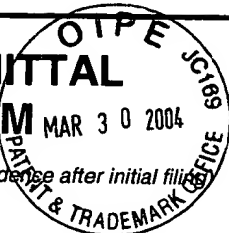
Full name of first inventor Sean Harnett
Inventor's Signature: Sean Harnett
Date: 24 April 2003
Residence: 50 Brooktree Drive, Penfield, NY 14526
Citizenship: U.S.
Post Office Address: 50 Brooktree Drive, Penfield, NY 14526

Please type a plus sign (+) inside this box → ☐

HDP-3B/21 based on PTO/SB/21 (08-00)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)



Application Number	09/712,596
Filing Date	November 14, 2000
First Named Inventor	Sean Harnett
Group Art Unit	2857
Examiner Name	Hal D. Wachsman
Attorney Docket Number	3197-000031/REA

Total Number of Pages in This Submission

ENCLOSURES (check all that apply)

- | | | |
|---|---|---|
| <input type="checkbox"/> Fee Transmittal Form
<input type="checkbox"/> Fee Attached
<input type="checkbox"/> Amendment / Response
<input type="checkbox"/> After Final
<input type="checkbox"/> Affidavits/declaration(s)
<input type="checkbox"/> Extension of Time Request
<input type="checkbox"/> Express Abandonment Request
<input type="checkbox"/> Information Disclosure Statement
<input type="checkbox"/> Certified Copy of Priority Document(s)
<input type="checkbox"/> Response to Missing Parts/ Incomplete Application
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 | <input type="checkbox"/> Assignment Papers (for an Application)
<input type="checkbox"/> Drawing(s)
<input type="checkbox"/> Licensing-related Papers
<input type="checkbox"/> Petition
<input type="checkbox"/> Petition to Convert to a Provisional Application
<input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address
<input type="checkbox"/> Terminal Disclaimer
<input type="checkbox"/> Request for Refund
<input type="checkbox"/> CD, Number of CD(s) _____ | <input type="checkbox"/> After Allowance Communication to Group
<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Status Letter
<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
Submission of Reissue Application Supplemental Declaration by Inventors, and executed Supplemental Declaration. |
|---|---|---|

Remarks

The Commissioner is hereby authorized to charge any additional fees that may be required under 37 CFR 1.16 or 1.17 to Deposit Account No. 08-0750. A duplicate copy of this sheet is enclosed.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Harness, Dickey & Pierce, P.L.C.	Attorney Name	Joseph M. Lafata	Reg. No.	37,166
Signature					
Date	Jun 5, 2004				

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service as express mail in an envelope addressed to: Director of the U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on the date indicated below.

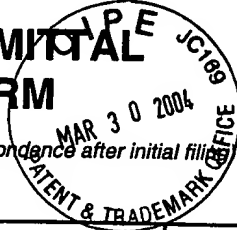
Typed or printed name	Joseph M. Lafata	Express Mail Label No.	
Signature		Date	Jun 5, 2004

Please type a plus sign (+) inside this box → ☐

HDP/SB/21 based on PTO/SB/21 (08-00)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)



Application Number	09/712,596
Filing Date	November 14, 2000
First Named Inventor	Sean Harnett
Group Art Unit	2857
Examiner Name	Hal D. Wachsman
Attorney Docket Number	3197-000031/REA

Total Number of Pages in This Submission

ENCLOSURES (check all that apply)

- | | | |
|--|---|---|
| <input type="checkbox"/> Fee Transmittal Form
<input type="checkbox"/> Fee Attached
<input type="checkbox"/> Amendment / Response
<input type="checkbox"/> After Final
<input type="checkbox"/> Affidavits/declaration(s)
<input type="checkbox"/> Extension of Time Request
<input type="checkbox"/> Express Abandonment Request
<input type="checkbox"/> Information Disclosure Statement
<input type="checkbox"/> Certified Copy of Priority Document(s)
<input type="checkbox"/> Response to Missing Parts/Incomplete Application
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 | <input type="checkbox"/> Assignment Papers (for an Application)
<input type="checkbox"/> Drawing(s)
<input type="checkbox"/> Licensing-related Papers
<input type="checkbox"/> Petition
<input type="checkbox"/> Petition to Convert to a Provisional Application
<input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address
<input type="checkbox"/> Terminal Disclaimer
<input type="checkbox"/> Request for Refund
<input type="checkbox"/> CD, Number of CD(s) _____ | <input type="checkbox"/> After Allowance Communication to Group
<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Status Letter
<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
Submission of Reissue Application Supplemental Declaration by Inventors, and executed Supplemental Declaration. |
|--|---|---|

Remarks

The Commissioner is hereby authorized to charge any additional fees that may be required under 37 CFR 1.16 or 1.17 to Deposit Account No. 08-0750. A duplicate copy of this sheet is enclosed.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Harness, Dickey & Pierce, P.L.C.	Attorney Name	Joseph M. Lafata	Reg. No.	37,166
Signature					
Date	Jun 5, 2004				

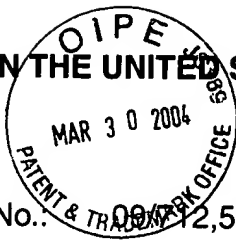
CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service as express mail in an envelope addressed to: Director of the U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on the date indicated below.

Typed or printed name	Joseph M. Lafata	Express Mail Label No.	
Signature		Date	Jun 5, 2004

COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



ATTORNEY DOCKET NO. 3197-000031/REA

Application No.: 09/12,596

Filing Date: November 14, 2000

Applicant: Sean Harnett

Group Art Unit: 2857

Examiner: Hal D. Wachsman

Title: FUZZY LOGIC TUNING OF RF MATCHING NETWORK

Attorney Docket: 3197-000031/REA

**SUBMISSION OF REISSUE
APPLICATION SUPPLEMENTAL
DECLARATION BY INVENTORS**

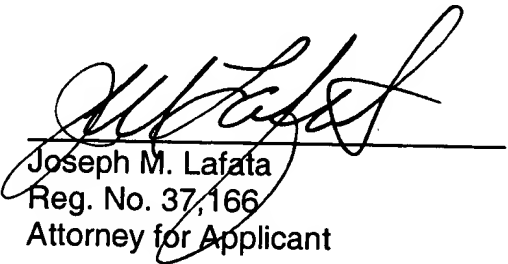
Director of the United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed herewith is a Reissue Application Supplemental Declaration by Inventors to be filed.

Respectfully submitted,

Dated: January 5, 2004


Joseph M. Lafata
Reg. No. 37,166
Attorney for Applicant

Harness, Dickey & Pierce, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
Phone: (248) 641-1600
Fax: (248) 641-0270



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 09/712,596

Filing Date: November 14, 2000

Applicant: Sean Harnett

Group Art Unit: 2857

Examiner: Hal D. Wachsman

Title: FUZZY LOGIC TUNING OF RF MATCHING NETWORK

Attorney Docket: 3197-000031/REA

**SUPPLEMENTAL DECLARATION
FOR REISSUE APPLICATION TO
CORRECT "ERRORS" STATEMENT**

SUPPLEMENTAL DECLARATION

I hereby declare that:

Every error in the patent which was corrected in the present reissue application, and which is not covered by the prior oath(s) and/or declaration(s) submitted in this application, arose without any deceptive invention on the part of the applicant.

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of first inventor Sean Harnett

Inventor's Signature: Sean Harnett

Date: 17, Dec 2003

Residence: 50 Brooktree Drive, Penfield, NY 14526

Citizenship: U.S.

Post Office Address: 50 Brooktree Drive, Penfield, NY 14526